

Mecheleciiv



VOL. 11

OCTOBER 1951

NO. 1



**THE SCHOOL OF ENGINEERING
GEORGE WASHINGTON UNIVERSITY**

Another page for

YOUR BEARING NOTEBOOK

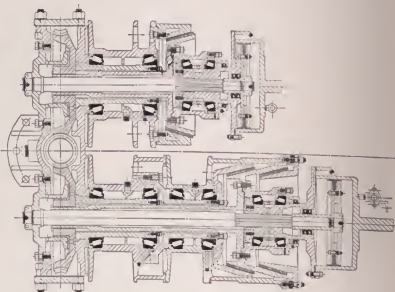


It's a cinch for a winch on TIMKEN® bearings

Heavy loads and wear are the problems engineers have to face when they design earth moving equipment like this. To carry the load on the winch, ten Timken® bearings are used. Thirteen more on the differential, pinion shafts, jackshaft drive wheels and rear wheels assure long life and trouble-free performance. Timken tapered roller bearings take any combination of radial and thrust loads, reduce friction, permit tighter closures. And they normally last the life of the equipment.

How to mount winch drums on TIMKEN bearings

To provide rigidity for both the single and double drums, the Timken bearings are mounted cone-adjusted. The adjustment is obtained through the use of shims between the members carrying the Timken bearing cones and the units bolted to these members. A cup-adjusted mounting is used in the units carrying the clutch housing. In this case, the adjustment of the Timken bearings is obtained with shims between the cup carrier and the housing.



TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS

How you can learn more about bearings

Some of the engineering problems you'll face after graduation will involve bearing applications. If you'd like to learn more about this phase of engineering, we'll be glad to help. For additional information about Timken Bearings and how engineers use them write today to The Timken Roller Bearing Company, Canton 6, Ohio. And don't forget to clip this page for future reference.

NOT JUST A BALL  NOT JUST A ROLLER  THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL  AND THRUST  LOADS OR ANY COMBINATION 



Do you fit in the Boeing picture?

Boeing's world-wide reputation for sound engineering achievement is founded on men. Boeing engineers and physicists are graduates of many universities and technical schools. They come from every state in the Union. Under inspiring leadership they have been welded into one of the most potent forces in any field of scientific advance.

If you can measure up to Boeing standards, there is an attractive future for you in this renowned group. In addition to the prestige which attaches to being a member of the

Boeing engineering team, there are other definite advantages:

1 The challenge of working on such vital programs as the B-47 and B-52 Jet bombers, guided missiles and other revolutionary developments.

2 Stability of career opportunity with an engineering division that is still growing steadily after 35 years.

3 The invigorating atmosphere of the Pacific Northwest — hunting, fishing, sailing, skiing, temperate climate all year around.

4 Good salaries. And they grow with you.

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6 If you prefer the Midwest, similar openings are available at the Boeing Wichita, Kansas, plant. Inquiries indicating a preference for Wichita, Kansas, will be referred to the Wichita Division.

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JOHN C. SANDERS, Staff Engineer—Personnel
Boeing Airplane Company, Seattle 14, Wash.

BOEING



The Hidden Radio

"It was spooky down in the cellar.

"The wife had taken over the upstairs radio for her pet soap opera. And the kids had their eyes glued to the western on the TV. So I had to dig up the old portable, hidden away in the basement storeroom.

"When the newscast was over, I clicked off the set and just sat there, thinking about other men in cellars of communist-dominated countries. Men listening at the risk of their lives to broadcasts from beyond the Iron Curtain. To words of Freedom.

"The Great Red Father doesn't like hidden radios! I don't wonder he cracks down, because Freedom and dictatorship don't mix. We took hold of our Freedoms back in 1776 and, through wars and depressions, we've hung onto them mighty hard.

"Those Freedoms are all in our Bill of Rights, and the chances of any outside enemies taking them away from us seem pretty slim to me. But we mustn't forget the enemies inside our boundaries, too. The religious and race hate-makers . . . the pint-size dictators . . . the wild-eyed reds and the slimy parlor pinks. The woods are full of 'em!

"And if we aim to keep our Freedom of religion and speech and press . . . if we want to keep our jobs safe, like mine down at the Republic mill, helping produce important steel . . . then we've got to keep our eyes and ears wide open to spot these inside enemies. They might be miles away . . . or living within our own community.

"In other words, we must keep informed about what's going on today. That's why I didn't want to miss the newscast . . . even if I had to risk my rheumatics in that dark, damp cellar."

REPUBLIC STEEL

Republic Building, Cleveland 1, Ohio



Republic BECAME strong in a strong and free America. Republic can REMAIN strong only in an America that remains strong and free . . . an America that has built its many industries from infancy to world leadership. And through all industries Republic serves America. The Communications Industry is a case in point . . . with its millions of telephones, its miles of telegraph and cable wires, its countless radios and TV sets. Much of the steel used in such equipment . . . carbon, alloy and stainless . . . comes from the many far-flung furnaces of Republic, which is proud to be a part of the voice of America at home and abroad.

* * *

{ For a full color reprint of this advertisement, write Dept. H, Republic Steel, Cleveland 1, Ohio }



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NO. 1

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... **ON OUR COVER.** The vehicle pictured is the "Best Friend of Charleston," the first locomotive to be placed in regular service on any American railroad, and the first to haul a train of cars.

The engineer had to open and close the valves manually, using the long levers he is holding in our picture. This operation continued for the duration of the trip, so the train's speed depended on the engineer's ambition and endurance.

Mofoto

ENGINEERING SCHOOL CALENDAR

September-October

- September 26th thru 28th—Registration
- October 1—Freshmen Orientation Assembly, Lisner Auditorium, 8:00 p.m.
- October 3—Engineers' Mixer, Knights of Pythias Hall 1012 9th St., N.W., Btw. K & L—8:30
- October 6—Theta Tau Initiation. Lisner Auditorium, Studios A and B.
- October 10—Joint Society meeting for all engineering societies. Gov't hall, room 1. A prominent speaker is promised.
- October 17—Theta Tau meets in D-200.
- October 24—Sigma Tau meets in C-200.
- October 31—Engineers' Council meets in 203 Bender Bldg. All interested engineers are invited to attend.

make
LOCKHEED'S
great future

YOUR FUTURE

There's a better future—a better job—waiting for engineers at Lockheed Aircraft Corporation, in beautiful San Fernando Valley. At Lockheed you are well-paid from the start; work in modern, air-conditioned offices; receive training that prepares you for promotion—you are part of a team known for **leadership in aviation.***

These Lockheed planes show why Lockheed — and Lockheed engineers — earned that reputation for leadership:



THE VEGA—
flown to fame by Charles Lindbergh, Amelia Earhart, Wiley Post.



THE HUDSON BOMBER—
first American plane to fight in World War II.



THE P-38 LIGHTNING—
first 400 mile-per-hour fighter-interceptor.



THE F-84—
first all-weather jet interceptor assigned to duty with America's aerial defense forces.



THE SUPER CONSTELLATION—
larger, faster, more powerful; the plane that bridges the gap between modern air transport and commercial jet transport.



The jet of the future—
the plane you will help
create—belongs in this
frame. There will always

be empty frames like this, waiting to be filled by Lockheed engineers. That's why Lockheed will always need forward-looking engineers. So why not make Lockheed's great future **your** future. See your placement officer for illustrated brochures explaining work—and life—at Lockheed.

If your placement officer
is out of brochures, write:

M. V. Mattson
Employment Manager

LOCKHEED

AIRCRAFT CORPORATION
Burbank, California

*Aeronautical training is not necessary;
Lockheed will train you.

One facet of an engineering background often spoken of with pride by engineering teachers is its tendency to make logical thinkers. This is a fine thing. It has made America rich in technology, and has given us a standard of living far above that of the other nations.

Unfortunately, however, this very tendency toward logical thinking is what makes our engineers unable to deal with those very illogical beings—one's fellow men. Men's refusal to follow reasonable behavior patterns baffles our average engineer, who retaliates by washing his hands of the problem of human behavior and retires to the familiar and comfortably definite field of technical effort. The contribution of such a man to his country is his vote, his taxes, an occasional paper presented before his technical society, and complaints to his associates about the mistakes of politicians and business and civic leaders. There are numerous exceptions to this rule, but it is fair indictment of the profession. Engineering gives few leaders to the country.

Implicit in the definition of a profession is a sense of public responsibility. This is the aspect in which a profession differs from a trade. Simply as a citizen, one owes his fellows a reasonable effort to help maintain good government for all. As an educated member of a profession, one owes much more.

Questions constantly arise and confront a nation to which it is vitally important to find the right answer. The engineer's logical mind, if leavened with an awareness of the foibles and illogicalities of his fellow man, offers one of the best prospects for finding these right answers.

An awareness of and compassion for mankind's frailties is not often learned from books, but this does not mean that colleges and universities cannot supply a large part of this intellectual leaven. Of course they can, for that is what education really is. There is no such thing as a "technical education." At school one obtains a technical training. If one is diligent, an education can also be obtained. Some of the breadth of mind which is education is to be found in the study of the subjects called the "humanities." The remainder is to be found in the study of humans—one's fellow students.

Interest yourself in becoming a good citizen of your university, and you need not fear that you will fail as a citizen of your country. The correlation between student leadership and civic leadership is very high.

Here at George Washington University, the Engineers' Council is trying to build a sense of public responsibility and pride in our profession in student engineers. Give this aim your active support in engineering and university affairs, and in return your university will help you begin an education as well as a training.



—Mojoto

*Rubber Paving in Rock Creek
Parkway, Washington, D. C.*

RUBBER PAVEMENTS

by Al Moe

Undergraduate in Civil Engineering

Making use of rubber in road building, a relatively new idea, is rapidly gaining favor in the United States as well as the rest of the world. In one sense this idea can hardly be considered new since it has been tried with varying degrees of success for the past thirteen years in Europe and certain parts of the East Indies. Experiments have been going on even longer, extending back about fifty years.

The most energetic pioneers contributing to the development of rubber roads are the Dutch, who built a stretch of road with a rubber asphalt surface between Amsterdam and the Hague. The Dutch also built other test sections. It was from these roads that the present interest in the use of rubber admixtures originates.

The heavily traveled stretch between Amsterdam and the Hague has been in service for thirteen years. This includes the period of the recent World War II. The road, during that time, was subjected to all the abuses of military traffic, but emerged in good condition, requiring no further maintenance. Engineers have recently examined the road and found the rubber-asphalt very much alive, an indication that many more years of service could be expected.

The first American use of powdered rubber as an admixture for asphaltic concrete occurred in Akron,

Ohio, about 1947. The first rubber-asphalt highway section was placed just two short years ago on U. S. Highway 250 in Virginia about five miles west of Richmond. Since that time additional sections have been built in Arkansas, Connecticut, Florida, Georgia, Ohio, Maryland, Massachusetts, Minnesota, Missouri, New York, Texas, Virginia and Wisconsin. So far, the results observed from these sections have been acclaimed generally good, although there is very little data at present to support these claims.

What has been learned to date is quite encouraging and further studies are being made of the possibilities of rubber as an admixture in bituminous surfacing for streets, highways and airport pavements.

Before any more is said concerning possibilities and results, however, it may be well to explain just what this promising material is.

Rubber (natural, synthetic or reclaimed) powder is mixed with asphalt in amounts ranging from 1 per cent to 15 per cent by weight of the asphalt, either by directly mixing the powder with the asphalt prior to mixing the asphalt with the aggregate or adding the rubber to the aggregate just after the aggregate enters the mixing chamber of the asphalt plant. The latter method is preferred by the Natural Rubber Bureau which is conducting experiments in this country at the present time. The rubber powder is creamy colored, about the size of grains of salt or sand. When mixed with bitumen, the rubber absorbs its lighter fractions which reduces the ductility of the mixture, increases the melting point and lowers the penetration. These changes are beneficial in that they reduce the tendency for bituminous pavements to creep at high temperatures and minimize "bleeding."

Other results have been definitely noted. For instance, skid resistance is increased. Although the skid resistance of a rubber-asphalt pavement differs very little from that of a new flexible pavement not containing rubber, the "rubberized" pavement will retain its skid resistant qualities longer than the other.

The advantages of natural rubbers relative to synthetic or reclaimed rubbers are not definitely known, although it is assumed at this time that more reclaimed rubber will be required to obtain similar properties obtained through the use of natural rubbers.

In reviewing the specifications for various rubber roads laid in the United States and Canada up to this time, it is interesting to note the wide ranges of laying temperatures and penetration values involved. The percentage of rubber by weight of asphalt was quite uniform, ranging from 5.0 per cent to 6.3 per cent with an average of 5.8 per cent. Asphalt of penetrations 60 to 120, averaging about 99, were placed at 220°F to 360°F or about 290°F, average.

Mr. P. W. Litchfield, Chairman of the Board of the Goodyear Tire and Rubber Company, early in 1950 estimated that rubber in the amount of 5 per cent of the weight of asphalt in a conventional mix, applied 1½ inches thick on a 24-foot highway would add approximately \$1,000 per mile to the cost of that highway.

The addition of rubber to bituminous pavements still adds appreciably to the cost of the pavement. However, cost data is not stabilized as yet. As rubber compounds are put on a commercial basis, costs should be greatly reduced. Should a considerable market for powdered natural rubber develop as a result of tests that have been made, it is expected that these powders may be sold for less than 50 cents a pound. The probable cost of synthetic rubber powders may level off between 20 and 30 cents a pound. Although reclaimed rubber would be required in greater amounts than natural rubbers, its use, if proved satisfactory, would materially reduce the cost of adding rubber to pavements, since it is estimated that it can probably be produced in pulverized form for about 12 cents a pound.

It is possible, if the results turn out to be as good as expected, that savings may be realized in reduced road maintenance which may absorb the additional cost of the admixture. Further advantages lie in the ability of utilizing standard road building equipment without modification which will also contribute towards the control of increased costs.

It was stated earlier in this report that rubber roads have not been in existence for a sufficient length of time to draw broad conclusions. Nevertheless, from results observed so far it may be concluded that roads can be maintained more cheaply through the utilization of rubber. In spite of the meager data avail-

able, it has been determined from laboratory tests and observation of test sections previously installed that adding rubber to bituminous paving mixtures will:

- a. Reduce ductility
- b. Raise softening point (122°F no rubber, to 178°F 10% rubber)
- c. Lower penetration (natural rubber only)
- d. Increase compaction resistance
- e. Increase the coefficient of friction
- f. Increase elasticity

Construction problems have not increased due to the use of rubber, at least not sufficiently to warrant special attention. In some instances, the rate of advance of the pavers was reduced, since the "rubberized" material was a little heavier or stickier than the usual bituminous mixture. There was occasional tearing of the surface behind the paver, but the marks disappeared under rolling. Surfaces were rolled more quickly and also required less rolling since the material appeared more homogeneous and there was no evidence of free asphalt on the surface.

Airfield pavements have been installed at Friendship Airport in Baltimore and on a Naval Air Station operating jet aircraft in order to learn something of the possibilities of utilizing rubber-bituminous mixtures to check fuel spillage damage and deterioration of flexible pavements due to lack of traffic. Rubber-tar mixtures are being watched with interest. Tar is practically unaffected by spilled fuel but is inferior to asphalt as far as softening is concerned.

All that is necessary now is to wait and see. Perhaps rubber is the answer of the flexible pavement deficiencies. Time will tell.

First lane of natural rubber-asphalt paving is laid on Worcester Turnpike, near Boston.



AIR ROTC HERE

A unit of the Air Force ROTC has been organized at the University to help meet the problem of training officers and leaders for the Air Force. Bradley Hall has been renovated, renamed Chapin Hall, and will accommodate the offices, classrooms and equipment for the new program. Six officers and six airmen of the Air Force are stationed here to instruct students in the five courses offered. Students may choose one of five options: Communications, General Technical, Administration and Logistics, Comptrollership, and Flight Operations.

Engineering majors probably will be able to qualify for only the Communications option. Fifteen students must enroll in each option before it will be offered. The Communications option has further been given a thirty-man quota; however, this additional quota need not be filled in order to offer the course. Electrical engineers can enroll only in the Communications option until it has fifteen EE's, then other EE's may apply for another option. Another quota of 15 applies for engineers other than the EE's. After their quota of fifteen is filled, ME's and/or CE's may apply for one of the other courses. The Communications course will accommodate all of the engineers who apply.

The Air Force is hoping to have a communications network set up soon in Chapin Hall for the communications option, complete with transmitter and receiver, teletypes, a switchboard, and telephones to be used for training in the operations of communications centers. Courses will be taught in radar operations, radio operations, and code and theory. Eventually the unit will apply for an amateur radio license to use a 500-watt transmitter. Program schedules will be set up with other universities having ROTC units. The students will also be taught the use of test apparatus and will make repairs on equipment.

Freshmen and Sophomores will normally be registered in the basic courses, which will require approximately three hours a week. Two hours a week in class will be devoted to instruction in basic military science and world political science for the Freshmen. Sophomores will study the organization of the Air Force, navigation, weather, and technical operations. The third hour is allotted for drill. The advance course will require one hour a week for drill and five hours in instruction. The first two years ROTC will give two hours credit per semester and the advance course work will give three hours credit per semester. All students in ROTC program will be required to attend one six-week summer training camp during their enrollment in the advance course.

Deferments will be granted to all ROTC students in the second year of the basic course and to all students enrolled in the advance course. Deferments will be granted to 85 per cent of the freshmen who enroll in the program. Deferment for the freshman will be based on the recommendations of a board consisting of at least one representative of the University and two military personnel. Commissions as second

lieutenants in the Air Force Reserve may be obtained if the students are regularly enrolled at the University, are citizens, meet the physical requirements, and successfully complete the ROTC course. Students with prior military service can be given credit for their active duty which would waive all or part of the basic course. Students in the advance course will receive approximately \$31.00 a month, and during the six-weeks training summer camps they will be paid around \$122.50. Uniforms for students in the basic course are regular government issue; during the second two years tailored uniforms will be issued. Honor graduates of the program may be offered permanent ranks in the regular component of the Air Force.

The class schedule erroneously listed the days for drill as Thursdays and Fridays at 11:10 to 12:30. The correct days are Mondays and Fridays at the same time.

DON'T MISS THE MIXER

"This is one mixer where speeches will be at a min and mixing will be at a max," promises Al Moe, President of the Engineers' Council.

Highlight of this Mixer will be the introduction of the new Dean, Dr. Martin A. Mason (see "Personalities"). The festivities will take place in the Knights of Pythias Temple, 1012 9th St., N.W. The date is the traditional engineers' night, Wednesday, October 3, and the official opening time is 8:30 p.m.

Naturally, there will be plenty of Mr. Heinrich's malt product on tap for those who desire it, in fact all you can drink for half a buck, as well as potato chips and soft drinks. Also naturally, most of the faculty is expected to turn up—in a strictly unofficial capacity.

There is no need to urge any who attended last year's Mixer to come to this one; they will be there without urging. Those of you who have never had the privilege owe it yourselves not to miss this one.

AIEE TRIP IN OCTOBER

The annual AIEE chaimen's and counselors' meeting will be held at the University of Pennsylvania in Philadelphia on October 19 and 20. One feature of the meeting will be a special treat—a field trip through the Ford Motor Company's assembly plant in Philadelphia.

Anyone desiring to go to this meeting should contact Professor Antel, whose office is in Building N, or Bill Wooldridge, whose number is OWens 6282. Transportation will be provided.

ENGINEERING PERSONALITIES



Dr. Martin Alexander Mason, leading authority on beach erosion, assumed office on September 1 as Dean of the School of Engineering. Dr. Mason succeeds Dr. Frederick M. Feiker, who retired last May and is now Professor Emeritus of Engineering Administration in residence.

During World War II Dr. Mason, then Chief Engineer of the Army's Beach Erosion Board, and his staff provided the services with invaluable information for numerous amphibious landings. Such information as sand, rock and coral formation, and the depth of surrounding waters is vital to pre-invasion planning for amphibious operations. In 1942, Dr. Mason was requested by the Army to consider possibilities for landings on the French coast. His selections of "Omaha" and "Utah" beaches were used by the major Allied forces on D-Day to enter the continent of Europe.

The new Dean, a native of Washington, graduated from McKinley High School here, and is an alumnus of the George Washington University. He received the degree of BS in Engineering from the University in 1931, and undertook graduate work at the Bureau of Standards and Johns Hopkins University.

From early 1925 until mid-1937, Dr. Mason was employed at the Bureau of Standards doing research and testing of paper, engineering instruments, and water measurements devices. He also carried out some studies of hydraulic turbines, involving considerable study in the field of hydraulics.

The award of a John R. Freeman scholarship to Dr. Mason made it possible for him to continue his graduate work in the field of hydraulics at the University of Grenoble in France. John R. Freeman, a hydraulics engineer, established three trust funds to make possible scholarships for exceptional engineering students for the study of hydraulics in universities in Europe. These scholarships, which are still awarded, are administered by the Boston Mechanical Engineers Society, the A.S.M.E., and the A.S.C.E. In 1938, our new Dean won the degree of Doctor of Engineering, with honors, from the University of Grenoble.

During his studies abroad, in 1937 and 1938, Dr. Mason studied in hydraulic laboratories in France, Germany, Italy, and Switzerland, specializing in problems concerning water measurement and river regulation. In connection with the latter, he studied hydraulic structures used in Europe to control channels and paths of rivers.

Upon his return to the United States in late 1938,

Dr. Mason went back to the Bureau of Standards hydraulics laboratory to aid in the further development of water measurement methods, studying also water hammer and hydraulic model testing.

Around 1939, because of public demand, Congress established a technical organization to determine what was destroying the nation's beaches. Dr. Mason was asked to join the board to study the problem. Upon some preliminary research, he found that very few people had ever tried to discover anything about the more or less peculiar flow-habits of the ocean. This caused him to enter this field, and eventually resulted in his becoming one of the country's outstanding men in the study of beach erosion.

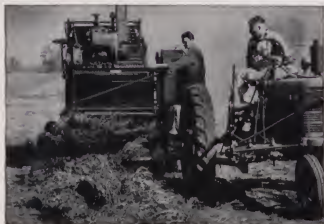
In April, 1940, the Army appointed Dr. Mason Chief of the Research Section of its Beach Erosion Board. He served in this capacity for a year, developing a research program for studying ocean wave and shoreline phenomena, including a program of field studies and harbor development. He then served as staff Head of the Beach Erosion Board for five more years, simultaneously serving as a consultant in specialized hydraulic fields, including harbor maintenance and shore protection. In addition to these duties, Dr. Mason lectured and taught proseminars in the Mechanical Engineering Department at George Washington from 1941 to 1944.

For his many contributions to his country, Dr. Mason received the Army Chief of Engineers Exceptional Civilian Service Award in 1945 "... in recognition of his exceptional achievements in originating, organizing, and supervising the preparation of confidential maps and strategic studies of foreign coast lines which have contributed immeasurably to the success of amphibious operations . . ." and the 1947 Engineering Award from the Washington Academy of Sciences for "... distinguished service in erosion studies leading to successful invasion of Japanese beaches . . ."

Dean Mason will continue to work with the Beach Erosion Board in an advisory capacity. He will also be associated with a newly-created Panel on Oceanography, under the Research and Development Board in the Department of Defense.

The Dean is vice-president of the Washington Academy of Sciences. He is a past chairman of the Washington section of the A.S.M.E., a member of the American Geophysical Union, an associate member of the A.S.C.E., and a member of Sigma Tau. He is 44 years old, and lives with his family in Chevy Chase. Mrs. Mason is a graduate of William and Mary College. The Masons have two children, an 11-year-old daughter and a 9-year-old son who is undecided as yet whether he will become a fireman or a postman when he is grown.

Only STEEL can do so many jobs



CAVE OF THE WINDS. This largest "supersonic" wind tunnel in the world—at the National Advisory Committee for Aeronautics, Lewis Laboratory, Cleveland—is capable of providing air velocities up to twice the speed of sound for aeronautical research. The tunnel's testing chamber measures 8 by 6 feet, and has flexible walls of highly-polished U-S-S Stainless Steel plates, specially made by U.S. Steel for this vital defense project.

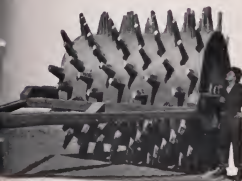
NEW WAY TO GATHER GOOBERS. This new peanut combine threshes along the row where the peanuts are grown, gathers up nut-laden vines, picks them clean, and deposits the mulch to condition the soil for the next crop. In tests, it has reduced harvesting man-hours per acre from 30 to 4, lets two men do the work of 12, saves \$40 an acre. By supplying steel for such equipment, U.S. Steel helps build a more productive America.

AMERICAN BRIDGE COMPANY • AMERICAN STEEL & WIRE COMPANY and CYCLONE FENCE DIVISION • COLUMBIA STEEL COMPANY • CONSOLIDATED WESTERN
TENNESSEE COAL, IRON & RAILROAD COMPANY • UNION SUPPLY COMPANY • UNITED STATES STEEL COMPANY • UNITED STATES STEEL EXPORT COMPANY

so well...



WHEELS WITHIN WHEELS. Here you are looking into the driving gears of a 10-ton vertical closing machine, making U-S-S TIGER BRAND Elevator Rope to lift and lower the elevators in many of our country's famous skyscrapers. This equipment also manufactures general hoisting rope for applications such as the cranes shown in illustration at right. Whether you need enormous steel cables to support a bridge, or wire that's finer than a human hair, United States Steel manufactures a wire suited to your special requirements.



GIANT SHEEPSFOOT ROLLER. Army Engineers find this odd-looking, 36-ton steel roller a very useful tool for compacting and leveling off fill in the construction of airstrips. Although the defense program will require increasing amounts of steel, the constantly-expanding steel-producing facilities of United States Steel should enable it to supply steel for many essential everyday uses, too.



HOW TO SWING A STEEPLE 80 FEET UP. Here are two cranes completing the 80-foot lift of a prefabricated steel steeple, and about to swing it over its base. United States Steel has won a world-wide reputation as fabricators and erectors of steel work for everything from football stadia to church steeples, from bridges to television towers.

FACTS YOU SHOULD KNOW ABOUT STEEL

In 1951, the American steel industry must be able to purchase 30 million tons of high grade scrap *outside* the industry, if it is to achieve the record steel production goals set for it by our defense program. Memo to manufacturers, farmers and proprietors of auto "graveyards": Turn in your scrap! It means money for you, more steel for America!



UNITED STATES STEEL

Helping to Build a Better America

This trade-mark is your guide to quality steel

STEEL CORPORATION • GERRARD STEEL STRAPPING COMPANY • GUNNISON HOMES, INC. • NATIONAL TUBE COMPANY • OIL WELL SUPPLY COMPANY
UNITED STATES STEEL PRODUCTS COMPANY • UNITED STATES STEEL SUPPLY COMPANY • UNIVERSAL ATLAS CEMENT COMPANY • VIRGINIA BRIDGE COMPANY

ALUMNEWS

Virgil Harris, BEE '51, has landed in one of the softest spots we've heard about in years. He's at the Fish and Wildlife Service, in the section of Exploratory Fishing. You may wonder what an electrical engineer is doing in a spot like that. So did we. It turns out that he is an electronic scientist engaged in research and development on an electrical device for locating and catching fishes! What wonderful field work!

Dick Dangler, BCE '51, has recently gone overseas—but not with the army. He is in French Morocco acting as party chief with a group of U.S. contractors who are building a number of airfields over there. Is that where they have the "Casbah," Dick?

Ye Mecheleciv correspondent spent two weeks at the Naval Ordnance Laboratory in Silver Spring, Maryland this summer, and found that there were almost enough engineer alumni there to start their own alumni association. *John Goff*, BME '46, has been in their mine case section for some time, so it was no surprise to hear a lecture by him. *Bernie Bernstein*, BME '47, did surprise us. Last we heard, he was a traitor to the profession. He was a (shh!) physicist at the Naval Research Laboratory, but has recently redeemed himself—he's now a mechanical engineer at NOL. At least three of last year's graduates also are helping the Navy build better weapons at NOL. They are *Jim Petrolino*, *Bill Pickler*, and *Nick Sekas*, all BME '51. We saw other familiar faces, but time didn't allow our getting all the names. We're depending on you all to write us, boys.

Ernest Everett, BME '49, was called back into active service in the Marine Corps air reserve, and writes us that things are rugged in Korea. He says that he is flying "bent-wing birds," which we assume are F4U Corsair airplanes, that the dust is terrible.

and that his outfit flies a strike a day. The very best of luck, E.E.E., and may you get rotated home soon.

Note to *Erv Liljegren*, BSEng '49: Yes I have so too done something about getting you your long-overdue ODK key. The word has been passed to the ODK brass, so if you don't get it soon, give them a growl.

We see by the local papers (although friend Thos. has not favored us with any correspondence) that *Tom Mutchler*, BCE '51, Theta Tau, Sigma Tau, ODK, ex-Mecheleciv etc., is engaged to *Ruth Dunlap*, GW coed. No date was mentioned for the wedding. Fill us in on the details, young Thos.

Speaking of weddings, early this summer (June 9, to be exact) *Claude "Tiger" Dimmette*, BCE '50, was married to *Elise Shields*, GW coed, in a lovely ceremony at Epiphany Episcopal Church, here in Washington. No word has been received from him since.

We would select *Bill Whittemore*, BEE '50 as "the GW alumnus most enthusiastic about his job." Bill is a field service engineer with the Brush Development Company, makers of electronic pickups, piezoelectric materials, and instruments. He is soon to leave Washington for the Cleveland office, and sounded like a young man with his heart in his work.

The Law School is continuing to occupy the evenings of *Fred Ritchie*, BME '49. Fred is an enthusiastic golfer who hopes some day to break a hundred. He is still with the Washington Gas Light Company, where he supervises the installation of absorption air-conditioning equipment, and we hear he has recently received a promotion. Congratulations, Fred.

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SOCIETIES AND FRATERNITIES

● Last year's Engineers' Council activities were highly successful. As a preview of things to come, the first Engineers' Mixer of the school year, held at Christian Heurich's Hospitality Hall, "Old Georgetown Inn", on October 4, attracted over three hundred engineering students, faculty members and guests. The program for the evening was highlighted by a splendid exhibition of magic by the famous Mad Magician, Ed Compagna (undergraduate in ME). The free liquid refreshments kept the crowd in a jubilant mood and attendance remained about one hundred percent until the place was closed.

The real success of the year was assured shortly before the mixer. Those who have been in the University for a number of years know what travail registration usually turns out to be. Members of the council worked out a system streamlining this formerly odious procedure which was not only approved by the Dean and Engineering School Staff but was actually placed in effect. The new system worked so well that it was tried again in the spring with the same results and is now accepted as "The Way an Engineering School Registration Should be Handled."

There has always been discussion among the engineering organizations about the relative merits of joint meetings and individual society meetings. Professor Antel arranged for Dr. W. L. Everett, Dean of the Illinois University School of Engineering, to speak before AIEE, but suggested to the Council that it would be a good time to try out a joint meeting, since he was sure



Dean Feiker receives remembrance gift from Student Engineers

—Mofoto

Dr. Everett's topic, "Color Television" would be extremely interesting to the members of all the societies. The meeting was held and the results supported the arguments of the proponents for the joint meeting system. Two such meetings are scheduled for this coming year.

Two short weeks later, December 18, a cold, windy night, the Council performed its annual Christmas Tree Lighting ceremony. The GW Glee Club sang beautiful carols to the small, shivering crowd of about two hundred students who braved the ten to fifteen degree temperature to witness this impressive, traditional affair. Dean Feiker and President Marvin made short addresses appropriate to the occasion, after which the Dean pressed the button which lit the tree.

As usual, the second semester started out with the regular mixer. This time, it was held in the Club 400 on a bitter cold night, February 9th. In spite of the discouraging weather approximately two hundred hardy souls showed up to hear Dean Feiker make the sobering announcement that this was his last year as Dean of the Engineering School. In spite of it all, everyone had a good time.

The Engineers' Ball, bigger and better than ever, was held February 24th at the Hall of Nations Ballroom in the Washington Hotel and proved that it was still one of the most attractive events of the G. W. social season. Due to a misunderstanding a number of other university events had been scheduled for the same evening which unfortunately took its toll of potential customers. In spite of this, a profit of seven bucks showed up on the books.

(Continued on page 19)

Christmas Tree Lighting

—Washington Post





How to open a can of fog

The pilot pushes a button on the instrument panel.

And instantly, from metal tanks fixed to a warplane's fuselage, thick streams of artificial fog pour forth.

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On April 11 the George Washington University's Career Conference was born. This new and important event was ushered in with an address by the well-known Capt. Eddie Rickenbacker after which the engineers remained in Lisner Hall and listened to Civil Service Chairman, Robert Ramspeck; Chesapeake and Potomac Company's General Employment Manager, Wilfred C. Taylor; John Mansville's Vice President Hector Air- ing and top-ranking representatives from the Navy, Army Engineers, Bureau of Standards, Geological Survey and Public Health Service say: "We need plenty of engineers. We love you. We will give you the best salaries and chances for advancement. Come and work for us." Finally, as the year drew to a close, two hundred students, alumni, faculty and their wives and sweethearts gathered at the Dodge Hotel to honor Dean Feiker at the Annual Engineers' Banquet. General U. S. Grant, III, Vice President of the University made an address complimenting Dean Feiker on his ability as an administrator and the fine work he had done for the school. The remainder of the evening was spent in passing out awards and keys to outstanding engineering students. Paul Meissner, that intrepid photographer, performed an unintentional and exceptionally hilarious burlesque with the camera, ending his stunt by snapping the Dean and Mrs. Feiker with an exploding flash bulb. The accompanying picture is the result. This year the new council prepared an ambitious schedule that promises another outstanding year for all Engineering students.



● The student chapter of the American Society of Civil Engineers spent the year mixing business with pleasure. We made field trips to two great bridge projects: the Delaware Memorial Bridge at Wilmington, Delaware, and the Chesapeake

Bay Bridge at Annapolis, Maryland.

The monthly meetings included well-known speakers and fine movies. We heard H. G. Hunter, Assistant Commissioner of the Public Buildings Administration, who talked on "Engineering in Russia and Engineering Opportunities Overseas"; and Bruce Herman, Resident Engineer on the Chesapeake Bay Bridge, who gave an informal talk on the bridge. At the latter meeting Professor Miklofsky showed Bethlehem Steel Company's color film on the construction of the Golden Gate Bridge.

Later in the year Gail Hathaway, President of ASCE, spoke at the D.C. Section's annual dinner at the swank Officers' Club at the Bethesda Naval Hospital on "An Engineer's Impression of Present-day India."

Other speakers in the course of the year were Bob Harwood and George Collins on an interesting and unusual subject, "Molding Fibre-Glass Boats," and A. T. Goldbeck, of the Crushed Stone Association, who discussed research in civil engineering, with special references to his own experiences in this field.

The annual paper competitions were won by Bill Seabrooke (graduating senior) for "Structural Fire Proofing" and Al Moe (undergraduate) for "Rubber Pavements." Moe's paper appears in this issue.

(Continued on next page)

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- Xi chapter of Sigma Tau, national engineering scholarship honorary fraternity, has as its principal functions the recognition of top-flight students and the direction and support of worthwhile projects in the school of engineering.

During the past school year a representative number of engineering scholars were honored by selection to membership. The fraternity supported the program of the Engineers' Council, and conducted several social functions, including an initiation banquet in April, marking the first time that dates have attended the post-initiation festivities.



- Last year George Washington University's chapter of the American Institute of Electrical Engineers enjoyed a year featuring good meetings, excellent speakers presenting interesting subjects, and enough social doings to keep up the spirits of our hot-wire engineers.

The AIEE was host at the first joint society meeting, presenting one of the most interesting speakers the University has heard in a long time: Dr. W. L. Everett, one of the country's leading color television experts, who told the GWU engineers what it was all about in an entertaining manner that made the subject clear to all.

At other meetings during the year, Mr. R. L. Ware of the Virginia Electric Power Company told about "The District's 22kv Network"; W. J. Lank of PEPCO spoke on "Residential Type Substations"; and Everett S. Lee, past president of our parent organization, discussed "The Young Engineer's Future." This last talk was given at the ninth annual Student Night Banquet, sponsored by the Washington Section of the Institute, where Virgil Harris, EE '51, won the annual student award, a one-year membership in the Institute as an Associate Member. The fine roast beef dinner, held at the Naval Ordnance Laboratory in White Oak, Maryland, was free to all paid-up members.

Bill Wooldridge won the annual paper award with his "High Voltage Bushings." He got a certificate, a ten-dollar prize, and a trip to Villanova for the district branch contest.

Field trips featured visits to PEPCO's Benning Power Plant and to the "More Power to America Special," GE's wonderful traveling electrical exhibit.



- The year's student ASME activities started out with a smoker sponsored annually by the Washington Society of Mechanical Engineers for all mechanical engineering students in the Washington area.

We sent representatives Bob Curtis and Frank Yeide to New York with Professors Cruickshanks and Trumbull to attend our national Conference. The same group later traveled to the University of Pennsylvania with Professor Greeley for the annual regional Conference.

Four papers were presented in the annual ASME award contest, as follows: "Characteristics of Lubricating Greases" by Bob Curtis; "Mercury Steam Generating Stations" by Frank Yeide; "Construction Methods for Fibre-Glass Boats" by Bob Harwood; and "Properties and Application of Titanium" by Charles Jackson. Frank won first prize, a six-inch slide rule given by the chapter.



- The George Washington University component of the Institute of Radio Engineers had a good, varied program for the year. Speakers included Grote Reber, discussing "Radio Astronomy," who described his recent trip to Alaska to study radiation conditions during the total eclipse of the sun; and Gordon Lester, Radio Engineer in charge of the National Bureau of Standards

radio station WWV, who explained the standard frequency and standard time signals broadcast by his station. There were also films on "Radio Transmitter Principles and Typical Circuits" and "Effects of the Ionosphere on Radio Wave Propagation."

We made field trips to the Naval Observatory and to the Sound Recording Laboratory at the Library of Congress, and actively supported the Engineers' Council program for the year.

(Continued on next page)

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● Theta Tau, the engineering professional fraternity, looks back upon last school year as one of its most successful seasons. The chapter as a whole and several of its members had outstanding records.

The year began with a shrimp feast in Rock Creek Park on November 11, where the actives and alumni were hosts to prospective members. Early in December the alumni invited actives and pledges to a stag party at the Engineers' Club.

Theta Tau was represented by a float in the Mumsers' Parade during the Homecoming game with the South Carolina Gamecocks. Although not a prize-winner, the float gave the engineers a lot of publicity.

Tom Mutchler traveled to Kansas City in December for the bi-ennial convention, where he was selected as outstanding delegate. This is the second consecutive time this honor has come to Beta Gamma's representative. For the first time, we decided to enter a team in the intra-mural sports program, and had the satisfaction of seeing our bowling team beat out Sigma Chi social fraternity for first place in both winter and spring tourneys.

Both initiation banquet-dances were extremely successful. At the last banquet Dean Feiker received a lucite gavel, emblematic of his position of Honorary Regent of the chapter, and the alumni gave the chapter a handsome birthday cake for its 16th birthday.

Tom Mutchler won the Theta Tau award as the senior who contributed the most to the engineering school during his four-year career. Bill Seabrooke won a coveted and rarely given award from Pi Delta Epsilon for outstanding journalistic achievement, and our Regent, John Lewis, was elected senior class president.

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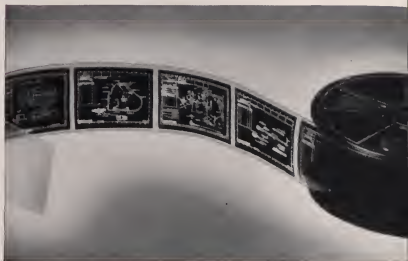
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